

## **Remarks**

### **I. Applicants' Invention and the Amendments**

Applicants' invention relates to methods of use of compounds that possess one or more ionic and hydrophobic chemical moieties spatially located so as to mimic the spatial location of at least one ionic or hydrophobic amino acid residue of insulin. That is, the compounds of the present invention mimic the three-dimensional structure of amino acids of insulin and are designed to interact with the insulin binding site of the insulin receptor.

Claim 1 is amended herein to specify that hyperglycemia and hyperglycemia associated with diabetes mellitus are ailments treated by the claimed method. This amendment finds support throughout the specification, for example, at page 9, line 28 through page 12, line 3 where hyperglycemia and hyperglycemia arising from diabetes mellitus are discussed. Claim 1 is further amended to specify that the compounds utilized in the claimed method interact with the insulin binding site of the insulin receptor. Claims 16 and 32 are similarly amended to specify that the compounds utilized in the claimed methods bind at the insulin binding site of the insulin receptor. Support in the specification for the amendments can be found at, for example, page 14, lines 14 through 23, where the mode of interaction of the compounds of interest with the insulin receptor is discussed. Further support for the amendment to claim 1 can be found in Examples 12 through 14. In these examples, agonist compounds of the invention are shown to bind to the insulin binding site of the insulin receptor when tested in insulin binding competition experiments. Corresponding support for the amendment to claim 32 can be found in Examples 1 through 11 describing antagonist compounds of the invention in insulin binding competition experiments.

Applicants do not intend to abandon the subject matter of prior claims 1, 16 and 32 but reserve the right to pursue subject matter of the same or similar scope in a duly filed related application.

The amendments do not introduce new matter.

## **II. The Outstanding Rejections**

Claims 1-10 and 20-25 stand rejected under 35 U.S.C. §112, second paragraph, for reciting Alzheimer's disease as an insulin-related ailment. Claim 1 is further rejected for containing the open language of "including" instead of the closed language of "consisting of."

Claims 1 and 16-17 remain rejected under 35 U.S.C. § 102(a) as being anticipated by Sportsman et al. U.S. Patents 5,851,988 ("Sportsman I") and 6,329,431 ("Sportsman II").

## **III. Summary of the Interview with Examiner**

The undersigned participated in a telephone interview with Examiner Robinson on November 9, 2004. The outstanding rejections were discussed, and the undersigned proposed the claim amendments made herein to overcome the rejections. The "Interview Summary" prepared by the Examiner and faxed on the day of the interview is an accurate summary of the substance of the interview. The Examiner indicated that the amendments to claims 1, 16, and 32 obviate the Section 112, second paragraph, rejections as well as the Section 102 rejection over Sportsman I and II.

## **IV. Reasons for Patentability**

### **A. The Rejections under 35 U.S.C. § 112 May Be Withdrawn.**

In the Final Action, the Examiner took the position that the specification on page 26 does not definitively identify Alzheimer's disease as an insulin-related ailment and further that Alzheimer's disease is not recognized in the art as such. In response, in order to further prosecution of the application, Applicants have amended claim 1 to remove this reference to Alzheimer's disease as a potential ailment to be treated by the claimed method.

The Examiner also took the position that the phrase "including hyperglycemia associated with diabetes mellitus" in claim 1 was objectionable. Also to further prosecution of the application, Applicants have replaced the word "including" with the word "and" in the claim.

The rejections under Section 112, second paragraph, therefore, may properly be withdrawn.

**B. The Rejections under 35 U.S.C. § 102 over Sportsman I and II May Be Withdrawn.**

In the Final Office Action, the Examiner took the position that claims 1-10 and 16-17 were anticipated by Sportsman I and II, asserting the patents taught compounds that mimic insulin stimulation.

Independent claims 1, 16, and 32 have been amended herein to recite that the compounds utilized in the claimed methods interact at the insulin binding site of the insulin receptor. This amendment highlights the distinction between Applicants' invention and the disclosure of the Sportsman I and II patents. The Sportsman documents teach "insulin agonist" compounds that interact with the kinase domain of the insulin receptor (see Sportsman I, column 8, lines 27-29 and Sportsman II, column 6 lines 43-45) and teach that stimulation of receptor activity by the compounds is independent of the peptide hormone [insulin] binding site (see Sportsman I, column 1, line 66 through column 2, line 2 and Sportsman II, column 2, lines 3-6). See also, Sportsman I and Sportsman II, Example 1D, where an exemplary Sportsman compound is demonstrated to bind to a fragment of the insulin receptor that includes the kinase domain but lacks the insulin binding domain of the receptor.

Claims 1, 16 and 32 as amended require that the compounds utilized in the claimed methods interact at the insulin binding site of the insulin receptor. This requirement clearly distinguishes the methods of the claims from the disclosure of Sportsman I and II.

Therefore, claims 1-10, 16 and 17 are novel over Sportsman I and II and may be allowed.

**Conclusion**

In view of the foregoing remarks and amendments, Applicants respectfully request early notice of allowance of all the pending claims.

Respectfully Submitted,

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